Claim 1: A Raman amplification method for pumping WDM signal light within an optical fiber, that uses pumping lights having two or more different pumping wavelengths, comprising steps of:

calculating a combination of optical power at said two or more different pumping wavelengths for said pumping lights in backward pumping so as to provide a substantially flat Raman gain within a predetermined signal wavelength band;

carrying out bidirectional pumping with at least part of said pumping lights wherein said bidirectional pumping includes said backward pumping; and

changing a respective distribution of pumping power to wavelength of said bidirectional pumping.

Claim 2: The Raman amplification method according to Claim 1, wherein:

a total optical power of said bidirectional pumping is not changed from the combination of optical power of said backward pumping calculated in said calculating step.

Claim 3: The Raman amplification method according to Claim 2, wherein:

all of said pumping lights are used for backward pumping and part of said pumping lights are used for forward pumping.

Claim 4: The Raman amplification method according to Claim 3, wherein:

shorter wavelengths of said pumping lights are used for forward pumping.

Claim 5: The Raman amplification method according to Claim 4, wherein:

the combination of optical power of backward pumping is larger than that of forward pumping.

Claim 6: The Raman amplification method according to Claim 5, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an LD with a grating structure.

Claim 7: The Raman amplification method according to Claim 4, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an LD with a grating structure.

Claim 8: The Raman amplification method according to Claim 3, wherein:

the combination of optical power of backward pumping is larger than that of forward pumping.

Claim 9: The Raman amplification method according to Claim 8, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an LD with a grating structure.

Claim 10: The Raman amplification method according to Claim 3, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an LD with a grating structure.

Claim 11: The Raman amplification method according to Claim 2, wherein:

shorter wavelengths of said pumping lights are used for forward pumping.

Claim 12: The Raman amplification method according to Claim 11, wherein:

the combination of optical power of backward pumping is larger than that of forward pumping.

Claim 13: The Raman amplification method according to Claim 12, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an LD with a grating structure.

Claim 14: The Raman amplification according to Claim 11, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an LD with a grating structure.

Claim 15: The Raman amplification method according to Claim 2, wherein:

the combination of optical power of backward pumping is larger than that of forward pumping.

Claim 16: The Raman amplification method according to Claim 15, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an LD with a grating structure.

Claim 17: The Raman amplification method according to Claim 2, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an LD with a grating structure.

Claim 18: The Raman amplification method according to Claim 1, wherein:

all of said pumping lights are used for backward pumping and part of said pumping lights are used for forward pumping.

Claim 19: The Raman amplification method according to Claim 18, wherein:

shorter wavelengths of said pumping lights are used for forward pumping.

Claim 20: The Raman amplification method according to Claim 19, wherein:

the combination of optical power of backward pumping is larger than that of forward pumping.

Claim 21: The Raman amplification method according to Claim 20, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an LD with a grating structure.

Claim 22: The Raman amplification method according to Claim 19, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an LD with a grating structure.

Claim 23: The Raman amplification method according to Claim 18, wherein:

the combination of optical power of backward pumping is larger than that of forward pumping.

Claim 24: The Raman amplification method according to Claim 23, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an LD with a grating structure.

Claim 25: The Raman amplification method according to Claim 18, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an LD with a grating structure.

Claim 26: The Raman amplification method according Claim 1, wherein:

shorter wavelengths of said pumping lights are used for forward pumping.

Claim 27: The Raman amplification method according to Claim 26, wherein:

the combination of optical power of backward pumping is larger than that of forward pumping.

Claim 28: The Raman amplification method according to Claim 27, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an LD with a grating structure.

Claim 29: The Raman amplification method according to Claim 26, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an LD with a grating structure.

Claim 30: The Raman amplification method according to Claim 1, wherein:

the combination of optical power of backward pumping is larger than that of forward pumping.

Claim 31: The Raman amplification method according to Claim 30, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an LD with a grating structure.

Claim 32: The Raman amplification method according to Claim 1, further comprising:

performing forward pumping with at least one multi-mode pumping laser having an LD with a grating structure.

Claim 33: An optical transmission system that transmits a WDM optical signal through an optical transmission path comprising:

an optical transmitter configured to output said WDM optical signal into said optical transmission path;

two or more Raman amplifiers that are connected to said optical transmission path in series, and configured to Raman-amplify said WDM optical signal; and

an optical receiver configured to receive said WDM optical signal propagated through said optical transmission path, wherein:

at least one of said two or more Raman amplifiers is configured to adjust a wavelength characteristic of noise figure to provide a predetermined wavelength characteristic of noise figure for receiving said WDM optical signal at said optical receiver.

Claim 34: The optical transmission system according to Claim 33 wherein:

one of said Raman amplifiers is configured to adjust a wavelength characteristic of noise figure by way of bidirectional pumping.

Claim 35: The optical transmission system according to Claim 34 wherein:

all pumping lights in said Raman amplifier are used for backward pumping and shorter wavelengths of the pumping lights are used for forward pumping.

Claim 36: The optical transmission system according to Claim 35 wherein:

the wavelength characteristic of noise figure at said shorter wavelengths is substantially due to the backward pumping, and only backward pumping provides a same wavelength characteristic as that for the Raman gain, and is approximately the same as a gain for when bidirectional pumping is performed with lights for backward pumping turned off.